REMARKS/ARGUMENT

Reconsideration is respectfully requested of the Office Action of July 21, 2009 relating to the above identified application. A three-month extension of time together with the associated fee is filed herewith.

The claims have been amended to place them in better condition for allowance. Thus in Claim 1, to stress the fact that the inorganic oxide is a particulate material, the terms "high surface area inorganic oxide" has been inserted. Support is found on page 5, line 13 and 24 and para.[0021]of the specification.

In Claims 11 and 12, the terms doped tin oxide (SnO_2/F), and CeO_2/ZrO_2, has been inserted. Support for this addition is found on page 7, line 8 and para.[0029] of the specification.

No new matter is presented.

The rejection of Claims 9-20 under 35 U.S.C. 103(a) in view of Beer US 3,621,498 is traversed and reconsideration is respectfully requested. It is to be noted that Beer is cited in form of its family member GB 1,195,871 in the specification (page 3, line 14-25). All the comments given in para.[0012 and following] are incorporated herein and apply here as well.

Beer is directed to a coated electrode having a coating, which is a mixed crystal material and consists of an oxide of a "film-forming metal" and an oxide of a platinum group metal (refer to claim 1 of Beer). The electrodes of Beer may comprise a coating consisting of TiOx and RuOx (see Examples 1, 2) or IrOx and ZrOx (see Example 6).

There are important differences between the compositions of Beer and the catalyst compositions of the present invention:

a) the coating of Beer consists of a "mixed-crystal material" i.e. a mixed-oxide material as described in col. 2, lines 56-68 of Beer. This feature is essential for Beer and is explained and compared to a mere oxide mixture (refer to col. 4, line 48 to col. 5, line 25). In affords a chemical reaction between the oxides. Most important, plain oxide mixtures do not provide the adhesion properties needed by Beer (ref to col. 5, line 8-10).

b) the coating of Beer contains the oxide of the "film-forming material" in preferably more than 50 mol % of the composition (ref to col. 2, line 56-60). In further detail example 1 contains 70 mol% TiOx, example 2 describes 98.4 mol% TiOx and example 3 discloses coatings with 65.8 mol% TiOx (remainder in all cases RuOx). When calculated on a wt. % basis, a composition of 50 mol% TiOx and 50 mol% of RuOx would contain 37,5 wt% TiOx and 62.5 wt% RuOx. A composition of 50 mol% TiOx and 50 mol% of IrOx would contain 26 wt% of TiOx and 74 wt% of IrOx. The catalyst composition of the present invention contains less than 20 wt% of inorganic oxide based on the total weight of the catalyst. As a result, the ranges of inorganic oxide material are considerably higher in Beer compared to the present invention. This is due to the fact that a mixed oxide structure must be formed in Beer. To the contrary, in the present invention the content of inorganic oxide is limited to 20 wt% maximum, higher values lead to a low electrical conductivity of the catalyst (refer to spec. page 6, line 15-19).

c) The inorganic oxide in the catalysts of the present invention does not form a mixed oxide structure as in Beer. The present catalysts are powdery, composite materials which

contain the iridium oxide particles finely deposited on or dispersed around the inorganic oxide material (refer to spec. page 5, line 16-18). In other words, the inorganic oxide acts as a dispersion agent or deagglomerating agent in the catalyst of the invention.

d) The inorganic oxide is present as a particulate material and characterized by a high surface area in the range of 50-400 m2/g. Beer is silent to this feature.

e) The inorganic oxide is an inert material (ref to page 6, line 26). To the contrary, the oxide material of Beer is reacting with the precious metal oxide to form a mixed crystal material, as explained in a). The surface area of the catalyst of the invention is in the range of 40-100 m2/g (ref to page 8, line 2). Thus, the composition of the present invention is markedly different from Beers coatings.

f) The presence of high surface area inorganic oxide improves the performance and the lifetime of the catalysts in water electrolysis (refer to page 6, line 21-25). The resulting catalysts are very active have a high surface area and a low degree of agglomeration (refer to page 7, line 16-18).

The object of the present invention is to provide improved Ir-oxide based catalysts for water electrolysis according to claim 1. The skilled person starting from Beer would not arrive at the present invention. Beer is directed to coatings of an electrode, not to a catalyst mate.

For the sake of arguments: In order to arrive at a particulate catalyst composition when starting from Beer, the skilled person must remove the coating from the electrode core. Additionally the skilled person must

a) ignore the teaching of Beer (as to make mixed crystal materials)

b) he must vary the oxide content outside the ranges given by Beer, and

c) he must use particulate, high surface area inorganic oxide in a certain BET range (a teaching which Beer is completely silent of).

Taking all these steps together, it appears evident that the catalyst composition of claim 1 is non-obvious in view of Beer.

The Office Action concludes by alleging that it would have been obvious to optimize the result effective variable based on amounts of base material and platinum group material. However, the Office Action has not established that the amount of base material or the amount of platinum group material is a "result effective variable". Hence applicants respectfully submit that the Office actions has failed to establish *prima facie* obviousness of the claimed subject matter of this application.

Accordingly, the rejection is deemed improper and should be withdrawn.

Favorable action at the examiner's earliest convenience is respectfully requested.

Respectfully submitted,

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